



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,321	06/30/2005	Tsuyoshi Himori	043890-0742	1137

20277 7590 02/08/2008  
MCDERMOTT WILL & EMERY LLP  
600 13TH STREET, N.W.  
WASHINGTON, DC 20005-3096

EXAMINER
----------

LAM, CATHY FONG FONG

ART UNIT	PAPER NUMBER
----------	--------------

1794

MAIL DATE	DELIVERY MODE
-----------	---------------

02/08/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/541,321	<b>Applicant(s)</b> HIMORI ET AL.	
	<b>Examiner</b> Cathy Lam	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on November 13, 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-10,12-15 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) 15 and 18-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-10, 12-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

In view of the amendment and remarks filed on November 13, 2007, the pending claims continue to be unpatentable as following:

***Election/Restrictions***

1. This application contains claims 15, 18-21 are drawn to an invention nonelected with traverse in the reply filed on January 18, 2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

***Claim Rejections - 35 USC § 112***

2. Claims 12 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. In claims 12 & 14, the phrase “exposed outward from the surface of the ...” is vague and indefinite, as it is unclear how the pattern is “exposed outward”.

***Claim Objections***

4. Claim 13 is objected to because of the following informalities: it is depended upon a canceled claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. Claims 1, 3-10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arrington et al (US 6586683).

Arrington discloses a printed circuit device comprised of a substrate (110), a plurality of electrode pads (130,135,140,150) and wiring traces (145) (col 3 L 9-12).

The electrode pads and the wiring traces (145) are formed of copper (col 3 L 7). The substrate (10) can be an organic insulating board or a ceramic substrate (col 3 L 3 & L 6-7).

A copper oxide layer (190) is formed onto the all exposed surfaces of the electrode pads and wiring traces (145) (col 3 L 20-23 & Fig. 2).

The prior art shows that there is no copper oxide layer coated between the electrodes pads. The examiner however is taking the position that the prior art has had the copper oxide coating on the substrate surface removed or purposely not coated onto the substrate surface.

Furthermore, the prior art teaches a copper oxide layer is directly formed onto wiring traces and electrode pads, thus without the step to oxidize the metal film. The examiner is taking the position that the claimed metal oxide layer is the final product of the metal film and that Arrington's copper oxide layer is the final product of the present invention. In one embodiment of the prior art, the oxide layer (not under the protective layer) is removed to reveal the conductive circuit feature; this clearly shows that the oxide layer can be partially coated over the wiring traces and electrode pads (col 2 L 20-34).

The prior art however does not teach the wiring traces and electrode pads are made of Ag or Ag based alloy as in claims 7-8. The prior art is also silent about the thickness of the copper oxide layer. The prior art is silent about having some part of the wiring traces or electrode pad and the substrate not covered by copper oxide layer.

In view of Arrington's teaching, one skill in the art would choose silver or silver-noble metal alloy as the conductive pattern because silver is well known to be used as conductive material in printed circuit boards.

Regarding the thickness of the oxide layer, the examiner is taking the position that one skill in the art could easily determine a workable thickness because finding such thickness involves only routine experimentations.

### ***Response to Arguments***

6. Applicant's arguments filed on November 13, 2007 have been fully considered but they are not persuasive. Applicant traverses the art rejection and raises the following issues:

- A. The prior art does not teach a copper oxide layer coated between the electrode pads.
- B. The prior art fails to teach a metal oxide layer formed by oxidizing the metal film.

In respond to the above issues:

- A. The copper oxide layer is only formed onto the conductive pads and wiring traces, whereas in the present invention the copper oxide layer is formed onto at least a portion of the electrode pads and a portion of the substrate between the electrodes. Both situations are selectively forming the copper oxide onto the surface. Since Applicant has not specifically stated any advantages of having the copper oxide layer between the electrode pads, the examiner is taking the position that the present invention is actually one step backward of the prior art because to make Applicant's

Art Unit: 1794

structure, Arrington would not have to mask or deliberately avoid the copper oxide layer between the electrode pads and wiring traces.

B. "a metal oxide layer formed by oxidizing the metal film..." is a process limitation. Applicant is reminded that it is the product itself which must be new and unobvious, see *In re Pinkington* 162 USPQ 145, 147 (C.C.P.A. 1969). Product by process claimed are not patentably distinct over product claims unless it can be shown that the product produced by the process is in some manner measurably distinct from the product produced by another process, therefore there will be no weight given to the product by process verses product claims.

Thus, the above art rejection is believed to be fair and proper.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cathy Lam/  
Primary Examiner, Art Unit 1794  
January 30, 2008